**Prebiotics and Probiotics Defined**

The Food and Drug Administration (FDA) defines a prebiotic as “a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon, and thus improves host health.”\(^1\)

The FDA defines a probiotic as “a living microorganism which, when administered in adequate amounts, confer health benefits to the host.”\(^2\) These microorganisms are usually bacteria and are sometimes referred to as “healthy”, “friendly”, “good” or “beneficial” bacteria. Probiotics are microorganisms similar to those that naturally exist in the gut\(^3\). The idea is that in order to stay healthy, we must maintain a delicate balance of microflora (i.e. a mix of different bacteria) in the gastrointestinal tract. That balance can easily be upset if unwanted bacterial populations become predominant in the GI tract.

**Balancing Bacterial Flora**

A proliferation of harmful bacteria in the gut can rob your body of the essential nutrients it needs by consuming those nutrients that your body would normally absorb. Symptoms of unbalanced bacterial flora include\(^4\):

- Abdominal pain
- Indigestion
- Bloating
- Food allergies
- Malnutrition

In many cases, good bacteria have a difficult time displacing the unwanted bacteria and require help; this is where prebiotics come into play\(^5\).

**Prebiotics: Benefits and Drawbacks**

Prebiotics are generally fibers or starches (e.g., oligosaccharides) that have been shown to be beneficial; however these can have some drawbacks\(^6\), including:

- Large dosages are required to be effective
- They can cause flatulence
- They are sensitive to their specific environment
- They only work in the colon

**PreforPro: A New Generation of Prebiotics**

As a result of extensive research, the scientists at Deerland Enzymes have developed a novel prebiotic that supports the growth of healthy bacteria in the gut through a mechanism that is not fiber or starch-based. PreforPro addresses the drawbacks of typical prebiotics on the market; benefits include:

- Efficacious in small doses within hours (not days)
- Functions in both the small and large intestines
- Does not cause flatulence
- Not affected by varying gut environments
- Works with a broad spectrum of probiotic species

*This novel prebiotic addresses the drawbacks of typical prebiotics on the market.*

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\(^1\) FDA, “Prebiotics,” Food and Drug Administration, 2023.


\(^3\) FDA, “Prebiotics,” Food and Drug Administration, 2023.

\(^4\) “Prebiotics and Probiotics,“ Mayo Clinic, 2023.


\(^6\) “Prebiotics,” University of Michigan, 2023.
PreforPro In Action

PreforPro has been shown under both physiological conditions in-vitro and in-vivo to preferentially promote the growth of beneficial Lactobacillus, Bifidobacterium and Bacillus subtilis strains when competing with undesirable bacterial strains. The effects are achieved at small doses within hours, in both the small and large intestine.

Figure 1: B. longum anaerobic growth under physiological conditions

Figure 2: Lactobacillus lactis anaerobic growth under physiological conditions

PreforPro supports the population of beneficial bacteria, such as Lactobacillus lactis, as shown in Figure 2. PreforPro has shown the same benefit with all tested strains of Bifidobacterium and Lactobacillus.

Figure 3: Lactobacillus paracasei colony counts when competing against Bacteroides fragilis with the prebiotic Inulin compared to PreforPro

PreforPro has been shown under both physiological conditions in-vitro and in-vivo to preferentially promote the growth of beneficial Lactobacillus, Bifidobacterium and Bacillus subtilis strains when competing with undesirable bacterial strains. The effects are achieved at small doses within hours, in both the small and large intestine.

Figure 4: In-vivo growth of beneficial bacteria, B. longum, when competing with undesirable bacteria, E.coli, in different sections of the gastrointestinal tract of mice that were administered PreforPro

Within a 24-hour time period the subjects with PreforPro showed a 10-fold bacterial growth increase of B. longum in the ileum, and a 100-fold increase in the large intestine and fecal matter compared to those with B. longum alone.

References:

These statements have not been evaluated by the FDA. This product is not intended to diagnose, treat, cure, or prevent any disease.

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